

# INPLASY

## Health and wellness coaching for Type 2 diabetes prevention: A Systematic Scoping Review Protocol

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### ADMINISTRATIVE INFORMATION

**Support** - Public Health Agency of Canada.

**Review Stage at time of this submission** - Preliminary searches.

**Conflicts of interest** - None declared.

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**Amendments** - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 01 November 2023 and was last updated on 01 November 2023.

## INTRODUCTION

**Review question / Objective** Objectives - The main objective of this systematic scoping review is to identify, map, and synthesize existing peer-reviewed evidence on health and wellness coaching programs or interventions for T2D prevention. The specific objectives are:

- 1) To map the nature and extent of existing literature regarding health and wellness coaching interventions for T2D prevention.
- 2) To map the design, adaptation, delivery, implementation, evaluation, and escalation characteristics of the existing coaching interventions for T2D prevention.
- 3) To identify, characterize, and contextualize the targeted communities or population groups of such coaching interventions and their involvement in the design, implementation, and evaluation.

- 4) To identify the short- and long-term impacts (and their measurements) of existing coaching interventions for T2D prevention on implementation outcomes and T2D prevention outcomes.
- 5) To identify implementation and effectiveness related facilitators, challenges, and limitations of existing health and wellness coaching interventions.

**Background** Non-communicable chronic diseases (CDs) account for approximately 74% of global deaths, representing around 41 million individuals(1). Of these deaths, 17 million occurred in people under the age of 70, indicating premature mortality (1). Diabetes is one of the leading CDs causing death and disability worldwide(2). Globally, an estimated 529 million individuals are living with diabetes, with type 2 diabetes (T2D) being the most common form, making up 96.0% of cases and accounting for 95.4% of disability-adjusted

life-years (DALYs)(2). At a more local level, in Canada, there is also a significant diabetes prevalence, with approximately 11.7 million individuals affected by diabetes or prediabetes(3). Among these cases, around 90% are identified as T2D, with a notable portion of approximately 1.7 million Canadians having T2D but remaining unaware of their condition (3). Ontario has the highest diabetes rates among Canadian provinces, with some 4,424,000 persons affected by diabetes or prediabetes in the province(4). A high percentage of these affected individuals live in the Peel region, and it is projected that by 2025, one in six adults living in Peel will have T2D, particularly those from non-White ethno-racial backgrounds (5,6).

The leading cause of this high prevalence in the local communities in Peel is due to independent and interrelated contributions of several factors, such as biological predisposition, health behaviours (e.g., physical inactivity, food consumption patterns and food insecurity), and disadvantaged socio-economic conditions and associated inequities (low income, low education status, unemployment, lack of social and community support, discrimination and stigma) and contextual and system factors (i.e., barriers to access to appropriate and timely preventive, diagnosis and monitoring health services, safe and available physical space to enhance physical activity) (4,6). There is a growing need for increased global, national, and local efforts to effectively address these contributing factors to prevent the onset of T2D (primary prevention) and minimize early-onset complications (secondary prevention) in individuals affected by the disease(3,4,6–10). Strategies that are effective, cost-effective, inclusive, and sustainable, with a comprehensive focus on overall health and spanning an individual's lifespan, are highly recommended (4,11), especially those that promote and facilitate positive behavioural changes (e.g., increase physical activity and improve nutrition)(4,11–14).

Among the many T2D prevention interventions described in the extant literature, interventions that use a health and wellness coaching approach are promising (15). Wolever et al. identified health and wellness coaching as “A patient-centered approach wherein patients at least partially determine their goals, use self-discovery or active learning processes together with content education to work toward their goals, and self-monitor behaviours to increase accountability, all within the context of an interpersonal relationship with a coach”(16). The health and wellness coach has been described as “a healthcare professional trained in behaviour change theory, motivational

strategies, and communication techniques, which are used to assist patients in developing intrinsic motivation and obtaining skills to create sustainable change for improved health and well-being” (16). The health and wellness coaching approach has been used in different areas of health, particularly for improving the treatment and management of chronic diseases, including diabetes(17–29), generally showing a positive impact and effectiveness in different health dimensions (17–29). Reported positive impacts include improvements in dietary patterns, weight reduction, increased diabetes self-efficacy, increased self-care behaviours, improvement in key biomarkers (blood pressure, fasting glucose, lipid profile, etc.), reduction in overall hospitalizations associated with chronic obstructive pulmonary disease, and increased quality of life are some of such reported positive impacts (17–29).

**Rationale** The use of health and wellness coaching models in T2D has predominantly centred around disease self-management and glycemic control in people already affected by this disease ((19,20,25,28,29). However, less is known of the role of health and wellness coaching in the primary prevention of T2D prevention. The Diabetes Prevention Program (DPP) implemented in the United States is the most widely recognized coaching-based program in this field (15). DPP used an intensive coaching-based lifestyle intervention (“Lifestyle Balance”) delivered by case managers or “lifestyle coaches” aimed at preventing and delaying the onset of diabetes in individuals with impaired glucose tolerance who were at high risk for disease through weight loss or weight maintenance (at least 7%) and engaged in a minimum of 150 minutes of physical activity at an intensity equivalent to brisk walking (15). Extended details and impacts of the DPP are reported elsewhere (15). The DPP trial and the scaled national DPP have demonstrated their effectiveness in facilitating weight loss by promoting a low-fat diet and encouraging increased physical activity, contributing to a significant risk reduction of developing and delaying the onset of T2D(30–32).

A similar national program, the NHS Diabetes Prevention Programme (NHS-DPP) in England, introduced coaching as a component of the interventions provided in the pilot digital stream (Healthier You: NHS DPP digital stream). Coaches supported changing diet, achieving weight loss goals, and increasing physical activity levels for adults with non-diabetic hyperglycaemia 12 months before referral (33–36). Coaching support included education, personalized goal setting,

monitoring progress, and receiving feedback on progress (33–36). The NHS DPP digital stream, including coaching phone calls, has significantly reduced glycated haemoglobin (HbA1c) levels and weight at six- and 12-month intervals (36). Yet, the specific contribution of the coaching function related to other digital features of the invention (i.e., online group-based peer support) has not been reported(36). There was also wide variation in the coaching-related services and coaching intensity provided across the NHS DPP digital program sites(35), which limits the ability to draw conclusions about the role of coaching in T2D prevention.

Overall, more systematic reviews and existing literature on health and wellness coaching for T2D are needed to adapt, scale, and evaluate existing effective programs or develop and assess new solutions for T2D prevention over the life course, especially to inform T2D solutions that are community-driven and sensitive to the cultural, socio-economic, contextual, and linguistic needs of local communities at high risk of diabetes. Mapping this type of evidence is essential to inform the development of new community-driven solutions or the adaptation and escalation of existing effective community-based programs to help tackle the exponential rise of diabetes worldwide and locally(2).

Thus, we aim to fill this literature mapping and synthesis gap to understand better the design, adaptation, implementation, evaluation, scalability, and sustainability of health and wellness coaching-based T2D prevention solutions that are sensitive to the needs of diverse communities at high risk of T2D, and that consider broader factors and outcomes related to T2D prevention, beyond the impact on traditional T2D risk factors (physical activity and diet pattern) and T2D biomarker outcomes such HbA1c levels and weight loss.

## METHODS

**Strategy of data synthesis** This rapid systematic scoping review will follow the methodological framework suggested by Levac, Colquhoun and O'Brien's extension(37,38) the Arksey and O'Malley's framework(39) and will be reported by the PRISMA extension for Scoping Reviews (PRISMA-ScR)(40).

Identifying the research questions (37,38)

The following main question will inform the rapid systematic scoping review: What wellness and health coaching interventions have been implemented locally (Canada) and globally to prevent T2D in families, adults, children, and populations? These sub-questions will provide an additional guide to the review:

1. What are the main components, implementation, evaluation design, and characteristics of the existing health and wellness coaching interventions for T2D prevention?
2. What communities or population groups have health and wellness coaching interventions for T2D prevention, and what is their involvement in their design, adaptation, implementation, and evaluation?
3. What have been the promising and limiting impacts of existing health and wellness coaching interventions for T2D prevention on implementation and prevention outcomes (direct and indirect)?
4. What are the main challenges and limitations of the existing wellness and health coaching interventions for T2D prevention?
5. What are the main recommendations for research and practice derived from the revised and synthesized literature of the existing community-based health coaching interventions for T2D prevention?

**Searching strategy:** A comprehensive literature search will be conducted by a professional medical librarian from January 1990 to October 2023 in the following databases: Ovid MEDLINE, Ovid Embase, Ovid PsycINFO, Ovid Cochrane Central Registry of Clinical Trials, Ovid Cochrane Database of Systematic Reviews, EBSCO CINAHL, ProQuest Theses and Dissertations, Web of Science, and Global Index Medicus. Additional references will be obtained by searching Google Scholar via Publish or Perish(41) sources from the CADTH Grey Matters and hand-searching relevant references. No restrictions will be applied to age, language, or geography. Following the 2015 Peer Review of Electronic Search Strategies (PRESS) Guideline(42), the search strategy will include subject headings and free text related to coaching, T2D, and prevention. The main search terms are based on the existing literature reviews around health and wellness coaching on diabetes treatment and management and other overall health well-being(16,19,21,26,28,29), and with the input of two clinician scientists who are also part of the team who have experience in diabetes care. The concept search strategy is shown in Appendix Table 1. The initial Medline Strategy, alongside the final comprehensive search strategy employed in the literature search, will be documented in the final report detailing the findings of this review.

**Eligibility criteria** Eligibility Criteria: 1) Existing literature focus of the review. Due to time constraints and resources and guided by the revision objectives, this scoping review will be limited to identifying, mapping, characterizing, and synthesizing existing primary peer-reviewed literature related to wellness and/or health

coaching programs or interventions for T2D prevention. 2) Existing literature timeline. Literature published from 1990 to September 30, 2023. The reason for selecting 1990 as the starting point for the literature search is because Wolever et al.'s systematic review of health and wellness coaching definition identified it as the key year when literature on this topic began to be reported and retrieved (16) 3) Language eligibility. Studies in all languages will be considered. 4) Type of literature: literature using qualitative, quantitative, or mixed-methods methodological approaches will be included.

Exclusion criteria: commentaries, opinions, abstracts, reviews of any type, retrieved paper without available complete text and grey literature (report, thesis, etc.), literature that does not focus or is not pertinent to T2D prevention and health and wellness coaching.

### Source of evidence screening and selection

Study selection (37,38)

First, the findings from the systematic search conducted in the identified literature databases will be uploaded to Covidence (43), an online software for systematic reviews, where any duplicate entries will be removed. Additionally, we will use Covidence (43) to assist with the selection (screening) and literature data extraction activities (literature chartering).

Second, we will conduct the first stage of the screening process by revising the titles and abstracts. To guide such a process, we will use the criteria of having the words coaching or their variant and T2D and their variant and prevention on the titles or abstract. A team of two reviewers, consisting of an experienced researcher and a trained junior reviewer, will screen titles and abstracts independently. Reviewers must agree on whether a paper should proceed to the second stage of screening, which involves a full-text revision. Any disagreements will be resolved either through a consensus reached between the two reviewers or with the help of a senior research member of the team.

Third, papers moved to the full-text screening stage will be screened for eligibility criteria separately by the same two team reviewers conducting the stage one screening. For a paper to be included, both reviewers must agree. In case of disagreement regarding the selection of papers for final inclusion, any conflicts will be resolved through mutual consensus or with the assistance of senior research team members. Fourth, we will manually review the references of the final selected papers to identify additional literature not retrieved during the search process.

The team members responsible for the stage one and stage two literature screenings will convene weekly meetings to address any challenges, uncertainties, and other matters about the screening process.

Although bias assessment is not a requirement of a scoping review (37,38), the critical appraisal of individual evidence is still recommended when reporting (40). Therefore, the team will perform the appraisal of the selected evidence by using the JBI's critical appraisal tools (Cross-sectional studies, Case-control studies, Case reports, case series, Cohort studies, Prevalence, economic evaluation, qualitative research, quasi-experimental studies, Randomized Controlled Trials, Qualitative Research appraisal tools)(44).

**Data management** The objectives and questions of the present review will guide the extraction of the key data from the included literature. We will use a study's data extraction sheet (Excel form) to facilitate the data charter process. We will pilot the data extraction sheet by applying it to a sample size of five to ten studies (37,38). One research team member will extract primary data from the piloted sample of papers. A second experienced researcher will validate the extracted data. If needed, adjustments to the data extraction sheet will be made based on the piloted data charter process. Moving forward, the two reviewers will independently complete the data extraction process for the literature for the remaining papers. Weekly meetings will be scheduled to address any challenges or uncertainties in the extraction process and refine the extraction form further to characterize the literature accurately. The data extraction form will be embedded in the Covidence software to facilitate the study characterization process. Covidence (43), an online software for systematic reviews, will be used to assist with the screening, selection and extracting data process. Excel file will be used to support the data extraction (Excel form) and data charter process.

### Reporting results / Analysis of the evidence

Charting the data (37,38)

The objectives and questions of the present review will guide the extraction of the key data from the included literature. We will use a study's data extraction sheet (Excel form) to facilitate the data charter process. We will pilot the data extraction sheet by applying it to a sample size of five to ten studies (37,38). One research team member will extract primary data from the piloted sample of papers. A second experienced researcher will validate the extracted data. If needed, adjustments to the data extraction sheet will be made based on the piloted data charter process. Moving forward,

the two reviewers will independently complete the data extraction process for the literature for the remaining papers. Weekly meetings will be scheduled to address any challenges or uncertainties in the extraction process and refine the extraction form further to characterize the literature accurately. The data extraction form will be embedded in the Covidence software to facilitate the study characterization process.

Collating, summarizing, and reporting the results (37,38)

The extracted data will be numerically, thematically, and graphically synthesized like the approaches used by other authors in similar review studies(26,29,45). The findings will be discussed and contextualized. Implications for research (including implementation science), policy and practice will be provided based on the findings and literature limitations.

**Presentation of the results** Key characterization/ information of the studies will be presented in Tables, figures/charts and text. Among the information we aim to report are the following.

Study characteristics:

First Author's last name & year of publication

Geographical setting of the study (local level setting name and country)

Type of study methodology (qualitative, quantitative, mixed methods)

Study main objective(s)

Type of study design (e.g., cross-sectional, cohort, randomized clinical trial (RTC), analytic/exploratory qualitative study)

Year when the study was conducted

Study's population and their main characteristics (sample size, gender, biological sex, age, ethnocultural background, socioeconomic position, marital status, reported children, health condition, contextual characteristic) and level of engagement in the design, adaptation, intervention and evaluation of the program or intervention.

T2D risk level and associated measurement

Characteristics of the coaching intervention/ program/solution

Wellness and/or Coaching definition

The main component of the coaching intervention/ program/solution (only coaching, coaching +other service (specify), coaching approach/ methodology).

Main coaching methods used (e.g., motivational interview, behavioural changes techniques)

Was it a new coaching intervention or program? Or was it an adaptation or scale-up of an existing one?

o The main characteristic of the design or adaptation of the coaching intervention/program/ solution.

o Level of community engagement in designing or adapting the intervention: local communities partners organizations and their members (people with lived experience).

Delivery mode characteristics (in person, online, on the phone, hybrid, other (specify)).

Duration of the coaching intervention or program (in months).

Coaching provider's characteristics (educational and/or professional/practice background, coaching training received, duration of the training, mode of delivery of the training).

Control's intervention if applicable

o Main components,

o Delivery mode characteristics

o Provider's characteristics

Implementation characteristics, outcomes, and associated measurements:

Implementation approaches and strategies (sites where the coaching intervention or program is implemented, level of engagement of local communities, community partners, and people with lived experiences).

Participant recruitment and participation.

Implementation outcomes: acceptability, adoption, appropriateness, feasibility, fidelity, penetration or reach, costs, and sustainability. Measures or instruments are used to assess the implementation outcomes, timepoint(s) when assessed.

Implementation challenges and addressing strategies: main challenges impacting the implementation of coaching intervention/program/ solution and the addressing strategies.

Main implementation limitations.

Implementation recommendations provided.

Impact on T2D direct and indirect risk outcomes and associated measurements:

Quantitative and non-quantitative impacts of coaching intervention/program/solution on T2D reduction risk-related outcomes.

**Language restriction** We will exclude non-English, non-Spanish, and non-French literature to ensure the feasibility of our study.

**Country(ies) involved** Canada.

**Other relevant information** Consultation (37,38)

The need to map existing literature was identified through ongoing collaborative efforts between our diverse research team, key community organizations in the Peel Region, Ontario, Canada, and other research partners that have come together to co-design, co-implement and co-evaluate community-based prevention and management diabetes initiatives that have a family-focused and culturally sensitive approach for South Asian and Black, Black African, and

Black Caribbean communities living in Peel. Our community partners (Roots Community Services, Indus Community Services, and Punjabi Community Health Services) and their diverse community members with lived experiences around T2D are actively involved in formulating our research questions (including those of this Scoping review) and guiding our research projects' design, implementation, and evaluation, including interpretation of findings and consequential actionable recommendations and practice.

Using a community-based participatory research approach (CBPR) (46–49), we will engage our community partners in validating and interpreting the findings and generating recommendations. This CBPR approach will strengthen and enrich the knowledge translation, application, and action process for the communities at high risk of T2D and their organizations, researchers, health systems, decision-makers and other actors interested in preventing T2D locally, nationally, and globally. Additionally, involving communities in building scientific evidence contributes to recognizing their expertise, experiences, and different ways of knowing and doing when identifying, designing, adapting, implementing, and evaluating solutions to address health and social inequities (47–50), contributing to T2D development among racially minoritized communities.

#### Discussion

The insights from this scoping review will provide valuable input for designing, implementing, and evaluating research, programming, and practice related to the health and wellness coaching approach for preventing T2D in diverse communities with varying ethnocultural and socioeconomic backgrounds. Specifically, we aim to gather and map evidence that can be adopted or used in population groups or communities that have been historically marginalized or excluded, which are also at a high risk of developing T2D (i.e., South Asian, and Black, African, and Caribbean communities) throughout their lifetime (51–56).

This scoping review has limitations and strengths that should be considered when planning similar revisions or when assessing and using the evidence that will be found and reported in this study. First, we focused solely on peer-reviewed literature, which means that relevant information from non-peer-reviewed sources will be excluded. We recommend conducting additional reviews on gray literature sources with a more localized or contextual focus to address this gap. This will provide a more comprehensive foundation for designing, implementing, and evaluating community coaching programs for T2D prevention. Second, there may be a scarcity of literature

specifically using community-driven approaches to the topic; therefore, the applicability of the evidence may be limited. However, even if only a small amount of relevant literature is identified, synthesizing and revising it can still serve as a valuable knowledge translation resource. This is particularly true for researchers and communities engaged in developing T2D health solutions that are community-driven, responsive to the needs of the local diverse communities, culturally sensitive, and inclusive. Lastly, while we are not setting any language restrictions on our literature search, it is important to consider that we will exclude non-English, non-Spanish, and non-French literature to ensure the feasibility of our study. Hence, the presence of evidence in languages other than Spanish, French, and English could exist, potentially constraining the generalizability of the findings from this current review.

**Keywords** Health and wellness coaching, Type 2 Diabetes, Prevention, Scoping Review, behavioural changes.

**Dissemination plans** We will disseminate the main findings from this scoping review through peer-reviewed papers and workshops for our community-based partners. Additionally, we will use the findings to inform the co-design, implementation and evaluation of Type 2 Diabetes Prevention solutions for local communities in Peel, Ontario, Canada.

#### Contributions of each author

Author 1 - Cilia Mejia-Lancheros developed and wrote the first version of this scoping revision protocol. She also comprises the core team responsible for conducting the scoping review and reporting its findings.

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Author 2 - Zayd Hafiz Hafiz provided critical input to this scoping revision protocol. He will actively be contributing to the execution and reporting of this scoping review.

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Author 3 - Michelle Hwang contributed to the design of the search strategy, contributed to the study protocol specific to search-related sections, and will conduct the search. She will provide a search methodology write-up for the manuscript.

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Author 4 - Diana Sherifali has made significant intellectual contributions to the protocols, leveraging her expertise in diabetes care, research, and health and wellness coaching.

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Author 5 - Angela J Carter brings invaluable intellectual and community insights to our protocol.

Also, she will contribute to the validation, contextualization, and implications of the review findings and dissemination plans.

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Author 6 - Gurpreet Malhotra provided invaluable intellectual and community insights into our protocol. Also, he will contribute to the validation, contextualization, and implications of the review findings and dissemination plans.

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Author 7 - Ansjyot Kappor provided invaluable intellectual and community insights into our protocol. Also, She will contribute to the validation, contextualization, and implications of the review findings and dissemination plans.

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Author 8 - Ian Zenlea has made invaluable contributions to the development and revision protocol for this scoping review. He will play an active role in executing the review and reporting the findings. Also, he is the main principal applicant of the funding grant supporting this review.

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